*भारतीय मानक*

***Indian Standard***

**IS 12198 : 2023**

# चीनी उद्योग के लिए स्प्रोकेट्स — विशिष्टि

*( पहला पुनरीक्षण )*

# Sprockets for Sugar Industry — Specification

*( First Revision )*

ICS 67.180.10



भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI - 110002
www.bis.gov.in www.standardsbis.in

**June 2023** **Price Group 4**

Sugar Industry Sectional Committee, FAD 02

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Sugar Industry Sectional Committee had been approved by the Food and Agriculture Division Council.

This is standard was originally published in 1987. In this revision, the standard has been brought out in the latest style and format of the Indian Standards and references to Indian Standards, wherever applicable have been updated. Requirement for sampling of acceptance of lot is omitted.

The composition of the committee responsible for the formulation of this standard is listed in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard*

# SPROCKETS FOR SUGAR INDUSTRY — SPECIFICATION

*( First Revision )*

## 1 SCOPE

This standard specifies materials, dimensions and other requirements for sprockets for bagasse, carrier cane carrier and feeder table chains used in sugar industry. This standard is applicable for sprocket of head shaft, tail shaft and idler shaft.

## 2 REFERENCES

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below:

| *IS No.* | *Title* |
|---|---|
| IS 1030 : 1998 | Carbon steel castings for general engineering purposes — Specification (*fifth revision*) |
| IS 2062 : 2011 | Hot rolled medium and high tensile structural steel — Specification (*seventh revision*) |
| IS 14667 : 2018 | Conveyor chains and slats used in sugar industry — Specification (*first revision*) |

## 3 MATERIAL

**3.1** Any of the following materials may be used in the manufacture of sprockets.

**3.1.1** Cast steel conforming to Grade 20 to 40 of IS 1030.

**3.1.2** For fabricated steel sprockets, mild steel conforming to IS 2062 may be used.

## 4 TERMINOLOGY

The following definitions shall apply for the purpose of this standard.

**4.1 Pitch Diameter —** Diameter of the pitch circle that passes through the centres of the link pins as the chain is wrapped on the sprocket.

Therefore, the pitch diameter $=$

$$\frac{\text{Chain of Pitch}}{\sin\ (180° \div \text{Number of Teeth})}$$

**4.2 Bottom Diameter —** Diameter of a circle tangent to the curve, called the seating curve, at the bottom of the tooth gap. It is equivalent to the pitch diameter minus the diameter of the roller.

**4.3 Outside Diameter** — Diameter of the tips of teeth and is

= Chain pitch [0.6 + Cot (180º ÷ Number of teeth)]

## 5 DIMENSIONS

**5.1** The bore of the sprocket shall be to suit the diameter of the solid shaft on which the sprocket is to be fitted.

**5.2** The sprocket may have 12, 14 or 16 teeth.

**5.3** The tooth profile of the sprockets shall be to suit the dimensions of cane carrier chain as specified in IS 14667.

**5.4** The sprockets shall be to suit 150 mm pitch chain having rollers of 75 mm diameter and 35 mm width.

**5.5** The finished dimensions of the sprockets shall be as given in Table 1.

**5.6** Outside diameter and the bottom diameter shall not vary by more than $\frac{+0}{-1}$ mm and the flange thickness and shroud width shall not vary by more than ± 1 mm of the values given in Table 1.

## 6 OTHER REQUIREMENTS

**6.1** The sprockets-for head shafts shall be keyed to the shaft.

**6.2** The sprockets for idler shafts shall be fitted with gun metal bush and shall be free to rotate on the shaft.

**6.3** In case of tail shaft, one sprocket shall be keyed and the other provided with gun metal bush.

**6.4** The sprockets shall have the central boss. The typical shape of the sprockets shall be as given in Fig. 1.

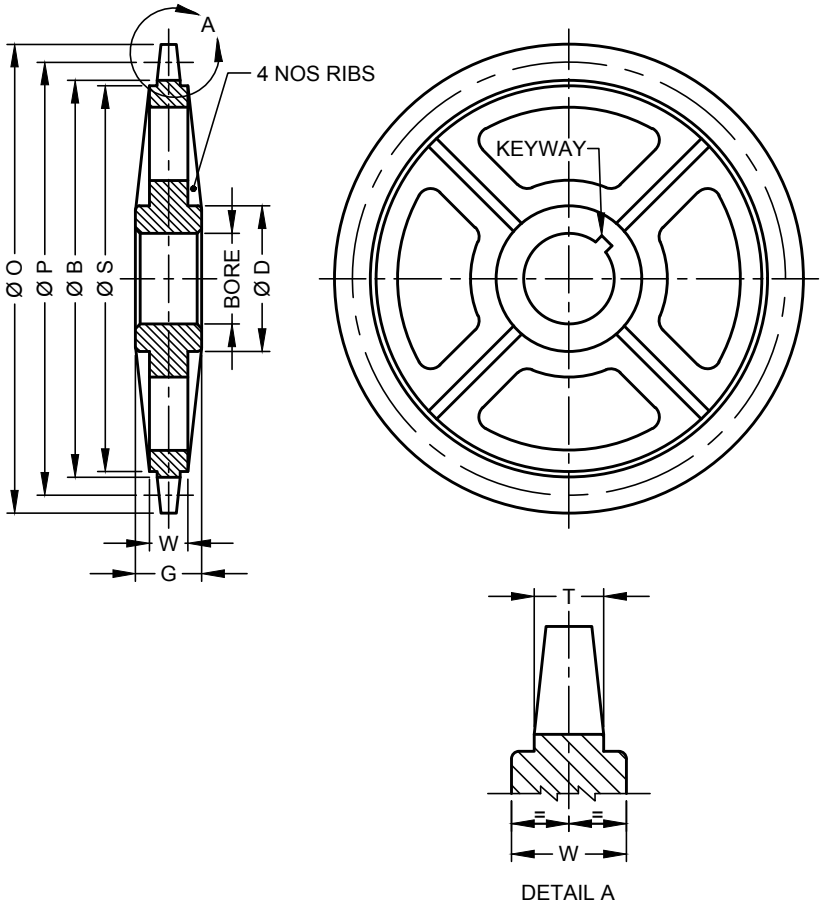


FIG. 1 SPROCKET FOR SUGAR INDUSTRY

## 7 WORKMANSHIP AND FINISH

**7.1** The tooth profile of the sprocket shall be machine cut by a hob milling or hobbing process.

**7.2** Other surfaces of the flange and boss of the sprocket shall be machined after casting or fabrication, as the case may be. There shall be no black spots on the flange faces and the bore of the boss after machining.

**7.3** The cast steel sprockets shall be free from blow holes, pits, burrs and other defects which are detrimental to its use.

**7.4** The fabricated steel sprockets shall be free from blow hole/sunder cuts in welding.

**7.5** There shall be no sharp edges in the sprockets.

## 8 MARKING

**8.1** The following particulars shall be marked on the sprockets:

a) Manufacturer's name, address or recognized trade-mark; and
b) Number of teeth.

### 8.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

## 9 PACKING

As agreed to between the purchaser and the supplier.

**Table 1 Dimensions for Sprockets**
(*Clause* 5.6)

| Sl No. | Chain Pitch | Number of Teeth | Pitch Dia-Meter | Outside Dia-Meter | Bottom Dia-Meter | Shroud Dia-Meter | Flange Thick-ness | Base Dia-Meter | Sprockets for Head Shaft | | Sprockets for Tail/Idler Shaft | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Shroud Width, W | Bose Width, G | Shroud Width, W | Bose Width, G |
| | | | ***P*** | ***Q*** | ***R*** | ***S*** | **T** | **D** | | | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
| i) | 150 | 12 | 579.6 | 649.8 | 504.6 | 485 | 32.0 | 280 | 45 | 100 | 36 | 80 |
| ii) | 150 | 14 | 674.1 | 747.1 | 599.1 | 580 | 32.0 | 300 | 45 | 100 | 36 | 80 |
| iii) | 150 | 16 | 768.9 | 844.0 | 693.9 | 674 | 32.0 | 320 | 50 | 110 | 40 | 85 |

NOTE — All dimensions in millimeters.

**ANNEX A**

(*Foreword*)

**COMMITTEE COMPOSITION**

Sugar Industry Sectional Committee, FAD 02

| *Organization* | *Representative*(*s*) |
|---|---|
| National Sugar Institute, Kanpur | SHRI NARENDRA MOHAN **(*Chairperson*)** |
| Army Service Core (ASC), New Delhi | LT COL B. B. SAHU |
| CONCERT, Chennai | SHRI R. SANTHANAM<br>SHRI M. SOMASUNDARAM (*Alternate*) |
| Consumer Guidance Society of India, Mumbai | SHRI SITARAM DIXIT<br>DR M. S. KAMAT (*Alternate*) |
| Food Corporation of India, New Delhi | SHRI DEEPAK KUMAR PANWAR<br>SHRI RAKESH KUMAR RANJAN (*Alternate*) |
| Food Safety Standards Authority of India, New Delhi | MS APOORVA SRIVASTAVA |
| Global Cane Sugar Ltd, New Delhi | DR G. S. C. RAO<br>SHRI ANIL SRIVASTAVA (*Alternate*) |
| Indian Institute of Sugarcane Research, Lucknow | DR A. D. PATHAK<br>DR A. K. SHARMA (*Alternate*) |
| Indian Institute of Toxicology Research, Lucknow | DR YOGESHWER SHUKLA |
| Indian Sugar Exim Corporation, New Delhi | SHRI RAJIV AGGARWAL<br>SHRI RAJEEV KURUP (*Alternate*) |
| Indian Sugar Mills Association, New Delhi | SHRI G. K. THAKUR<br>SHRI DEEP MALIK (*Alternate*) |
| MAARC Labs, Pune | DR VASUDHA KESKAR |
| MANAS Industry, Maharashtra | SHRI JEEVAN VASANT JADHAV |
| Ministry of Consumer Affairs, Food & Public Distribution, New Delhi | SHRI SURESH CHANDRA |
| National Co-Operative Development Corporation, New Delhi | SHRI K. P. VAISH<br>SHRI N. K. SHARDA (*Alternate*) |
| National Federation of Co-Operative Development Corporation, New Delhi | SHRI PRAKESH P. NAIKNAVARE<br>SHRI S. SOMASUNDARAM (*Alternate*) |
| The Sugar Technologists Association of India, New Delhi | SHRI SANJAY AWASTHI<br>SHRI ANURAG GOYAL (*Alternate*) |
| Triveni Engineering & Industries Ltd, Muzaffar Nagar | SHRI RAJESH SINGH<br>SHRI P. K. KHANDELWAL (*Alternate*) |

| *Organization* | *Representative*(*s*) |
|---|---|
| Tamil Nadu Sugar Corporation Ltd (TASCO), Chennai | SHRI E. MUTHUVELAPPAN |
| Vasantdada Sugar Institute, Pune | DR RAJEEV DANI |
| Walchand nagar Industries, Mumbai | SHRI D. R. SARDESHMUKH<br>SHRI P. V. KAWADE (*Alternate*) |
| BIS Directorate General | SHRIMATI SUNEETI TOTEJA, SCIENTIST 'E'/DIRECTOR AND HEAD (FOOD AND AGRICULTURE) [REPRESENTING DIRECTOR GENERAL (*Ex-officio*)] |

*Member Secretary*
SHRI RAJPAL
SCIENTIST 'D'/JOINT DIRECTOR
(FOOD AND AGRICULTURE), BIS

**Bureau of Indian Standards**

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 2016 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

**Copyright**



**Review of Indian Standards**

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in.

This Indian Standard has been developed from Doc No.: FAD 02 (20565).

## Amendments Issued Since Publication

| Amend No. | Date of Issue | Text Affected |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

**BUREAU OF INDIAN STANDARDS**

**Headquarters:**

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
*Telephones*: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

| **Regional Offices:** | | *Telephones* |
|---|---|---|
| Central | : 601/A, Konnectus Tower -1, 6th Floor, DMRC Building, Bhavbhuti Marg, New Delhi 110002 | 2323 7617 |
| Eastern | : 8th Floor, Plot No 7/7 & 7/8, CP Block, Sector V, Salt Lake, Kolkata, West Bengal 700091 | 2367 0012<br>2320 9474 |
| Northern | : Plot No. 4-A, Sector 27-B, Madhya Marg, Chandigarh 160019 | 265 9930 |
| Southern | : C.I.T. Campus, IV Cross Road, Taramani, Chennai 600113 | 2254 1442<br>2254 1216 |
| Western | : Plot No. E-9, Road No.-8, MIDC, Andheri (East), Mumbai 400093 | 2821 8093 |

**Branches** : AHMEDABAD. BENGALURU. BHOPAL. BHUBANESHWAR. CHANDIGARH. CHENNAI. COIMBATORE. DEHRADUN. DELHI. FARIDABAD. GHAZIABAD. GUWAHATI. HIMACHAL PRADESH. HUBLI. HYDERABAD. JAIPUR. JAMMU & KASHMIR. JAMSHEDPUR. KOCHI. KOLKATA. LUCKNOW. MADURAI. MUMBAI. NAGPUR. NOIDA. PANIPAT. PATNA. PUNE. RAIPUR. RAJKOT. SURAT. VISAKHAPATNAM.

Published by BIS, New Delhi